CLAIMS

1. A method of diagnosing a vehicle compressed-air generating system, characterized by comprising the steps of:

acquiring a number of operating data items associated with operation of the compressed-air generating system between turn-on of the system and subsequent turn-off of the system;

processing the acquired operating data items and storing the data items to create at least one database; and

examining the data items in said database to determine malfunction and/or potential malfunction situations of said compressed-air generating system.

2. A method as claimed in claim 1 wherein said step of acquiring operating data items associated with operation of the compressed-air generating system comprises the step of acquiring:

the speed ω_{comp} of the compressed-air generating system compressor;

the compressed-air temperature T_{air}; and

a temperature associated with operation of the compressor, in particular the temperature T_{water} of the compressor cooling fluid or the temperature of the compressor body.

3. A method as claimed in claim 2 wherein said step of acquiring operating data items comprises the step of calculating the temperature difference ΔT between said compressed-air temperature T_{air} and said temperature (T_{water}) associated with operation of the compressor : $\Delta T = T_{air} - T_{water}$.

4. A method as claimed in claim 3 wherein said accumulating step comprises the step of forming a data structure in which are memorized a

number of operating states, each defined as a function of the value of the calculated temperature difference (ΔT) and as a function of the acquired speed ω_{comp}.

5. A method as claimed in claim 1 wherein said step of acquiring operating data items comprises the steps of:

acquiring the time pattern of the pressure (P_{air}) of the compressed air generated by said system; said pressure (P_{air}) having an alternating time pattern, in which pressure peaks alternate with low-pressure regions;

determining the relationship between said pressure and at least one pressure threshold value;

repeating said step of acquiring the time pattern of the pressure for a work cycle of said system ranging between turn-on and turn-off of the system;

calculating the ratio between the number of occurrences in which, within a cycle, the acquired pressure P_{air} assumes a predetermined relationship with respect to said threshold value, and the time **Ttrip** the compressed-air generating system has been on;

storing, for each operating cycle, the respective calculated ratio value to create said database.

6. A method as claimed in claim 5 wherein said step of acquiring the time pattern of the pressure is preceded by an initializing step until the pressure generated by the system reaches a minimum threshold value.

7. A method as claimed in claim 1 wherein said step of examining the location of the data items accumulated in said database comprises the steps of:

defining, within said database, different regions corresponding to different operating states of said compressed-air generating system; and

determining the location of said data items within said regions.

8. A method as claimed in claim 7 wherein said step of examining the location of the data items in said database comprises the step of determining when a maximum time value associated with an acquired operating state located in an alarm region is exceeded.

9. A method as claimed in claim 8, wherein said step of examining the location of the data items in said database comprises the step of determining migration of said operating states towards an alarm region.